

Lesson 2: Tunneling through Time

Subject: Science, Mathematics
Skills: Knowledge, understanding, analogy
Strategies: using a grid, the scientific method
Time: 60 minutes
Group Size: any, groups of 3-4
Grade Level: 5-8

OBJECTIVES:

Through this activity, students will learn how archaeologists locate and recover artifacts from sites. Students will relate the archaeological site from some prehistoric or historic periods to better understand how people from that era lived.

BACKGROUND:

Artifacts from a certain time indicate the sort of life of a person or a group of people. Archaeologists recover these clues sometimes by digging through layers of soil. Whenever this is done the soil cannot go back to the way that it once was. The excavated site can never return again to the manner it was before digging. That is why it is very important to know the precise location of an artifact.

Archaeologists use mapping techniques so that it will be more understandable to those who analyze the site's findings. A name given to the grid system is the Cartesian coordinate system. Archaeologists take numerous measurements to establish a definite location of an artifact or feature. Later, this grid will help those who analyze the site to determine the culture of that person or group. However, teachers must emphasize that students should not perform any excavations on their own. Important information may be lost in this manner. It is also a crime to dig on federal land.

Vocabulary:

Archaeology: the study of past human cultures through investigating and analyzing artifacts, sites and behaviors

Archaic period: a time discussed in the introduction that lasted from 7000 to 1000 BC

Artifact: any object made or used by humans

Atlatl: a spearthrower made of stone from the Archaic period. It was attached to a string and allowed the weapon to travel farther when someone hunted with it.

Cartesian coordinate system: usually a two-dimensional grid made of lines and used to establish the location of an object

Chert: a type of hard stone used to make tools and weapons

Excavation: the method of discovering and uncovering artifacts from a site

Feature: specific areas such as fire pits refuse pits or storage pits that were used by prehistoric people. They are identifiable in a site because the soil covering them is darker than the soil they are made from.

Fire-cracked rock: sandstone that has been exposed to fire, allowing it to crumble more easily and giving it a reddish tint

Flake: a smaller piece of stone, usually chert that was chipped from a larger stone in order to obtain a sharpened edge.

Historic period: a time mentioned in the introduction that begins in 1600 AD and lasts until the present

Projectile: a stone tool with a sharpened edge used for a variety of activities in the life of prehistoric people

Provenience: the precise location of an artifact based on measurements obtained from a site

Site: an area that contains archaeological material

Site datum: a specific point from which the entire site is measured and recorded

Stratification Layer and Stratigraphy: the layers of earth in an archaeological site. The deeper the level, the older the material that is found in that level.

Unit: typically one square in an archaeological site that is to be excavated and investigated

Woodland period: an era discussed in the introduction of these lessons which lasted approximately from 1000 BC until 1600 AD

RESOURCES/MATERIALS:

Each group of students must have the following materials: a 24" by 24" piece of heavy paper, at least 12 feet of string, a ruler or yardstick, pencils, composition paper and scotch tape.

PROCEDURE:

- 1) Have each student imagine an event in his or her life that happened within the last week. On a piece of composition paper, have each student write ten artifacts that deal with that activity. If time allows, tell the students to pass their paper and have another child guess what activity was happening.
- 2) Explain to students that if an archaeologist finds these items 50 years in the future, that he or she will use them to learn about the students' daily lives. By looking at an everyday event, archaeologists have a better idea about the lives and cultures of people.
- 3) Place a 24" by 24" piece of paper in front of group of children. Instruct them to use their rulers to divide the paper into four 12" squares similar to the one on the handout for this lesson.

- Now use the scotch tape to tape the 12 feet of string along the borders of the square. This represents 4 units in a grid.
- 4) Have students cut out at least 10 artifacts from the second and third handouts. The students must choose to create an Archaic period site, a Woodland site, or site displaying items from the Harmony Brickworks (a Historic site). The students may color the artifacts if they wish but this is not necessary for the activity. They may also use a black marker to draw circular shapes on their grid. These may represent features. Tell them to tape those pieces of paper in various places on the grid.
 - 5) After each group has finished generating their archaeological site, have the children visit different 'sites.' Tell them to identify the sites based on the artifacts recovered there. Also have them use the provided grid to make a replica of the site that they visit. They should use the scale provided, 1" on the provided grid = 4" at the site they visit. The conversions should not be too difficult. Each student should measure the distances from the artifact to the edges of the borders of the unit. They should not simply draw pictures of the artifacts on their paper.
 - 6) To the right of the grid, there is a legend. Direct the children to use this to identify all of the artifacts. It is a bit confusing if the children write the name of the artifact directly on the grid and is more understandable if they use the legend.
 - 7) After the students finish the grid and hypothesize about the type of site they are looking at, have them make guesses about the type of people who lived there during that time.
 - 8) As a possible homework activity, instruct students to create a smaller version of a grid for an archaeologist may discover 50 years in the future. The artifact the students use in their grid should be ones that correspond to activities in their daily lives.

They will tape them onto handout 6. The game will then be played as bingo is played. The instructor may say, "this is an artifact from the Archaic period. It was a weapon also called a spearthrower." The students will then look for an atlatl. If it is on their paper, they may mark it. The game will be played until someone wins. (Perhaps they could earn the title, "Archaeologist of the Day?") The second activity is a crossword puzzle that is self-explained and simple for middle school aged children.



CLOSURE:

Students now should have an idea about the way archaeologists record and recover material from sites. They should also have attained knowledge about some specific types of artifacts that belong to certain time periods in Pennsylvania's history. The children should be able to distinguish some artifacts from the Archaic period from those of the Woodland period, for example.

EXTENSION:

There are two other activities following the 3 artifact handouts. They will enforce knowledge that the students have gained through this lesson. They are optional but encouraged. The first is a game. The students will cut 24 of the artifacts from handouts 2-4.

Name:

Handout 1: Site Plan

Scale: 1"= 4"



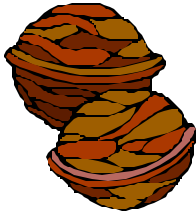












Date:

Legend:



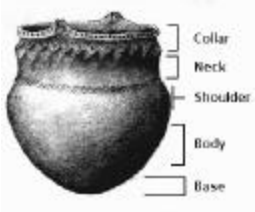








- A)
- B)
- C)
- D)
- E)
- F)
- G)
- H)
- I)
- J)
- K)
- L)
- M)
- N)
- O)

Additional Notes:







Lesson 2: Handout 2
Artifacts from the Archaic Period

 <p>Fish Bones</p>	 <p>Acorns</p>	 <p>Walnuts</p>
 <p>Spear Points</p>	 <p>Ancient Baskets</p>	 <p>Late Archaic Drill Point</p>
 <p>Native American with Atlatl (spear-thrower)</p>	 <p>Temporary House</p>	 <p>Pine Tree</p>
 <p>Fire Cracked Rock</p>	 <p>Grinding Slab</p>	 <p>Mussel Shells</p>
 <p>Bone Awl</p>	 <p>Stone Ornament</p>	 <p>Rabbit</p>

Lesson 2: Handout 3
Artifacts from the Woodland Period

		
Earth Mounds	Woodland House	Arrow Point
		
Ceramic Pottery	Pottery Kiln	Seashells
		
Beads	Birch Tree (hardwood)	Corn Plant
		
Bow and Arrow	Harpoon	Hopewell Raven Pipe
		
Bear	Cordage	Wooden Mortar and Pestle

Lesson 2: Handout 4
Artifacts from the Harmony Brickworks

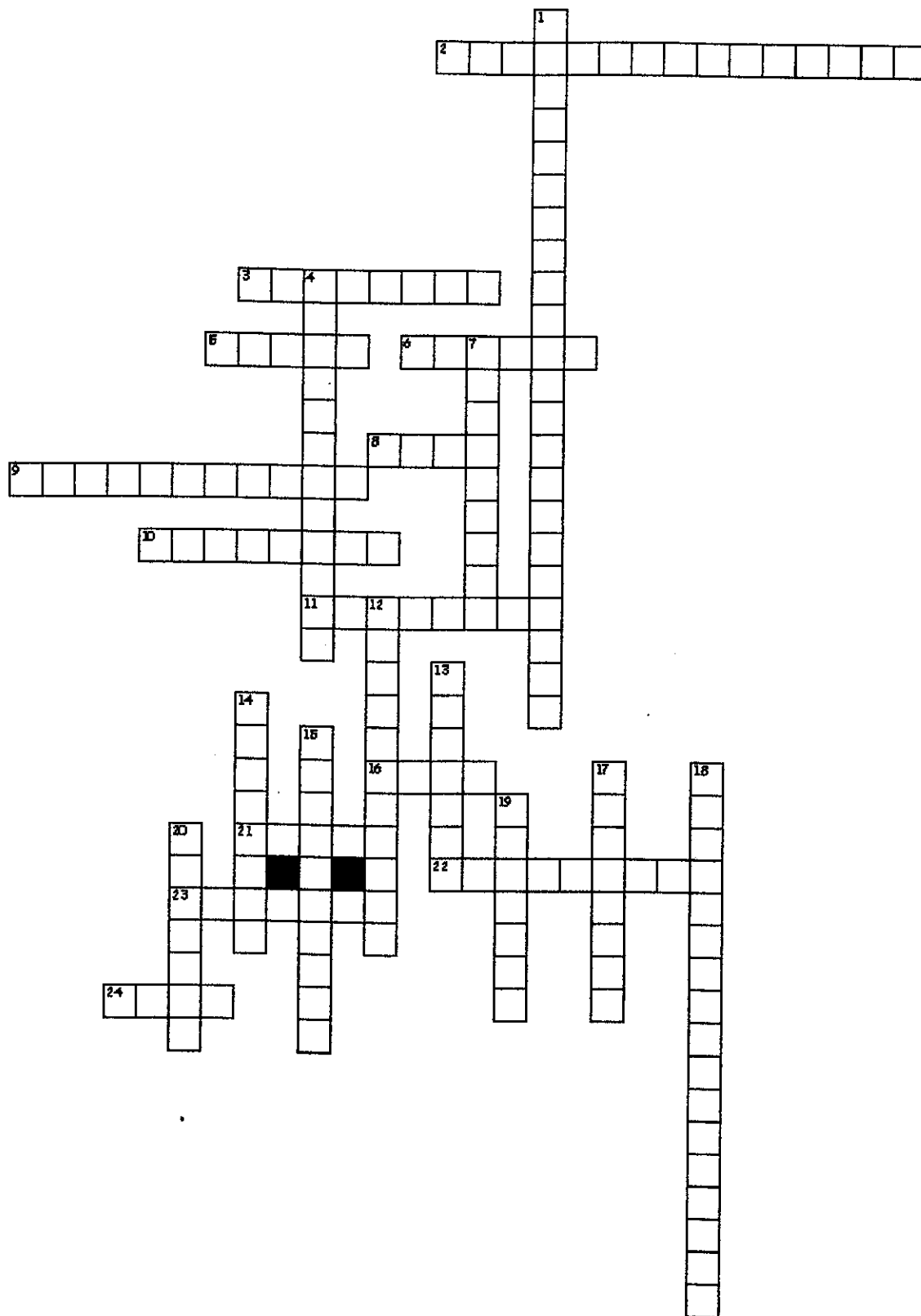
		
Bricks	Clock	Bathtub
		
Old Desk	Wheelbarrow	Old Stove
		
Shovel	Hammer	Sand
		
Lantern	Cooking Pots	Spike
		
Anvil	Brick Factory	Bucket

Lesson 2: Handout 5

The Archaeology Bingo Board

		Free Space		

Lesson 2: Handout 6



Across

2. usually sandstone which has been exposed to extreme heat and has a reddish tint
3. this is the period for which there are written records
5. a hard stone used to make tools and weapons
6. a spear thrower; a weapon from the Archaic period
8. one square on an excavation grid
9. the study of past human cultures through investigating and analyzing their artifacts, sites and behaviors
10. this was the period from 1000 BC to 1600 AD
11. mound-building Native Americans from the Woodland period
16. a food gathered in the Archaic period
21. a thin piece of stone cut from a larger piece in the process of making or sharpening a tool or weapon
22. the point from which all other points in an archaeological site are measured and recorded
23. this was a period of 9000 to 3000 years ago
24. a crop grown in the Woodland period

Down

1. the oldest known site in PA; one of the oldest sites in North America that could date to 15,000 years ago
4. the layers of the earth; typically at a site, the most recent layer is closest to the top
7. a town in Western PA that is currently being excavated; the site of the Harmony Brickworks
12. the exact location of an artifact based on measurements taken by archaeologists
13. the job of men in the Archaic period
14. something made or used by humans
15. a methodic way to recover and remove artifacts and other material from an archaeological site
17. soapstone; bowls were made from this during the late Archaic period
18. the name of the historic industry at Leetsdale
19. fired clay that does not appear until the Woodland period
20. specific area used by humans; these may have been hearths, cooking, refuse or storage pits

Teacher's Answers for Crossword

